

**Forest Practices Biomass Work-Group
DRAFT: Wrap-Up Document**

BMPs/Science & Comments/Conclusions

March 21, 2012

Note: text added to “Topics” or “Existing Forest Practices Rules” boxes are highlighted in red.

Prioritization “Buckets”

2. Timber issues that affect biomass.

Primarily an issue with timber harvest, road construction, etc., but that has or could relate to the impacts of biomass collection.

Topic 1: Definitions
Evaluate the definitions of: -Slash -Salvage -Debris -Hazard -Harvest -Risk -Consequence
Existing Forest Practices Rules
<p>WAC 222-16-010 General definitions</p> <p>"Clearcut" means a harvest method in which the entire stand of trees is removed in one timber harvesting operation. Except as provided in WAC 222-30-110, an area remains clearcut until: It meets the minimum stocking requirements under WAC 222-34-010(2) or 222-34-020(2); and The largest trees qualifying for the minimum stocking levels have survived on the area for five growing seasons or, if not, they have reached an average height of four feet.</p> <p>"Completion of harvest" means the latest of: Completion of removal of timber from the portions of forest lands harvested in the smallest logical unit that will not be disturbed by continued logging or an approved slash disposal plan for adjacent areas; or Scheduled completion of any slash disposal operations where the department and the applicant agree within 6 months of completion of yarding that slash disposal is necessary or desirable to facilitate reforestation and agree to a time schedule for such slash disposal; or Scheduled completion of any site preparation or rehabilitation of adjoining lands approved at the time of approval of the application or receipt of a notification: Provided, That delay of reforestation under this paragraph is permitted only to the extent reforestation would prevent or unreasonably hinder such site preparation or rehabilitation of adjoining lands.</p> <p>"Debris" means woody vegetative residue less than 3 cubic feet in size resulting from forest practices activities which would reasonably be expected to cause significant damage to a public resource.</p> <p>"Even-aged harvest methods" means the following harvest methods: Clearcuts; Seed tree harvests in which twenty or fewer trees per acre remain after harvest; Shelterwood regeneration harvests in which twenty or fewer trees per acre remain after harvest; Group or strip shelterwood harvests creating openings wider than two tree heights, based on dominant trees; Shelterwood removal harvests which leave fewer than one hundred fifty trees per acre which are at least five years old or four feet in average height; Partial cutting in which fewer than fifty trees per acre remain after harvest; Overstory removal when more than five thousand board feet per acre is removed and fewer than</p>

fifty trees per acre at least ten feet in height remain after harvest; and
Other harvesting methods designed to manage for multiple age classes in which six or fewer trees per acre remain after harvest.

Except as provided above for shelterwood removal harvests and overstory removal, trees counted as remaining after harvest shall be at least ten inches in diameter at breast height and have at least the top one-third of the stem supporting green, live crowns. Except as provided in WAC 222-30-110, an area remains harvested by even-aged methods until it meets the minimum stocking requirements under WAC 222-34-010(2) or 222-34-020(2) and the largest trees qualifying for the minimum stocking levels have survived on the area for five growing seasons or, if not, they have reached an average height of four feet.

"Forest practice" means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber or forest biomass, **including but not limited to:**

Road and trail construction;

Harvesting, final and intermediate;

Precommercial thinning;

Reforestation;

Fertilization;

Prevention and suppression of diseases and insects;

Salvage of trees; and

Brush control.

"Forest practice" shall not include: Forest species seed orchard operations and intensive forest nursery operations; or preparatory work such as tree marking, surveying and road flagging; or removal or harvest of incidental vegetation from forest lands such as berries, ferns, greenery, mistletoe, herbs, mushrooms, and other products which cannot normally be expected to result in damage to forest soils, timber or public resources.

"Forest biomass" (proposed) means material from trees and woody plants that are by-products of forest management, ecosystem restoration, or hazardous fuel reduction treatments.

"Green recruitment trees" means those trees left after harvest for the purpose of becoming future wildlife reserve trees under WAC 222-30-020(11).

"Low impact harvest" means use of any logging equipment, methods, or systems that minimize compaction or disturbance of soils and vegetation during the yarding process. The department shall determine such equipment, methods or systems in consultation with the department of ecology.

"Merchantable stand of timber" means a stand of trees that will yield logs and/or fiber:

Suitable in size and quality for the production of lumber, plywood, pulp or other forest products; Of sufficient value at least to cover all the costs of harvest and transportation to available markets.

"Public resources" means water, fish, and wildlife and in addition means capital improvements of the state or its political subdivisions.

"Partial cutting" means the removal of a portion of the merchantable volume in a stand of timber so as to leave an uneven-aged stand of well-distributed residual, healthy trees that will reasonably utilize the productivity of the soil. Partial cutting does not include seedtree or shelterwood or other types of regeneration cutting.

"Salvage" means the removal of snags, down logs, windthrow, or dead and dying material.

"Scarification" means loosening the topsoil and/or disrupting the forest floor in preparation for regeneration.

"Site preparation" means those activities associated with the removal of slash in preparing a site for planting and shall include scarification and/or slash burning.

"Slash" means pieces of woody material containing more than 3 cubic feet resulting from forest practices activities.

"Timber" means forest trees, standing or down, of a commercial species, including Christmas trees.

However, timber does not include Christmas trees that are cultivated by agricultural methods, as that term is defined in RCW 84.33.035.

"Wildlife" means all species of the animal kingdom whose members exist in Washington in a wild state. The term "wildlife" includes, but is not limited to, <u>any mammal, bird, reptile, amphibian, fish, or invertebrate, at any stage of development.</u> The term "wildlife" does not include feral domestic mammals or the family Muridae of the order Rodentia (old world rats and mice).
Existing BMP's/Science Related to Issue
N/A
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>
WAC 222-30-010 Policy--Timber harvesting. *(1) This chapter covers all removal of timber <u>and forest biomass</u> from forest lands in commercial operations, commercial thinning, salvage of timber <u>and forest biomass</u> , relogging merchantable material left after prior harvests, postharvest cleanup, and clearing of merchantable timber from lands being converted to other uses. It does not cover removal of incidental vegetation or removal of firewood for personal use. To the extent practicable, the department shall coordinate activities using a multiple disciplinary planning approach.
Either define "timber harvesting" or "harvest" and/or insert "and forest biomass" anywhere the rules refer to "harvest of timber"
Define "salvage" as a type of "harvest" to close SEPA loophole (if separate FPA for biomass = salvage)
Replace "salvage" or "harvest" with "forest practices" wherever appropriate
Debris/slash definitions outdated (volume based); need to incorporate piece size: replace with FWD and CWD definitions?
"Fine woody debris (FWD)": means material from trees and woody plants that is less than 3" in diameter at the large end
"Coarse woody debris (CWD)" means material from trees and woody plants that is greater than 3" in diameter at the small end
Add to definition of "forest biomass": Only stumps that are removed for the purpose of forest health, road construction, or conversion to non-forest land uses qualify as forest biomass.
Need definitions for hazard, risk, and consequence?

Topic 2: Timing
1. Will road abandonment and slash disposal requirements interfere with the need for forest biomass to cure over a period of 6-18 months?
2. Biomass harvest could challenge DNR's ability to monitor for compliance with FP rules.
Existing Forest Practices Rules
WAC 222-08-160 Continuing review of forest practices rules.
(2) Adaptive management program. The adaptive management program will be used to determine the effectiveness of forest practices rules in aiding the state's salmon recovery effort and provide recommendations to the board on proposed changes to forest practices rules to meet timber industry viability and salmon recovery.
(4) Compliance monitoring. The department shall conduct compliance monitoring that addresses the following key question: "Are forest practices being conducted in compliance with the rules?"
<u>WAC 222-24-052 Road maintenance.</u>
(1)(d) During and on completion of the following operations, the road surface shall be crowned, outsloped, or water barred and berms removed from the outside edge except those intentionally constructed for protection of fills:
i) Log, pulp, chip, or specialized forest product haul;

- ii) Rock haul; and
- iii) Road building.

(1)(e) Before the first winter rainy season following termination of operations, drainage structures must be cleared and the road surface must be crowned, outsloped, water barred or otherwise left in a condition which prevents accelerated erosion, interruption of water movement within wetlands, mass wasting, or direct delivery of water or sediment to a typed water. (See the board manual section 3 for specific guidance.)

Existing BMP's/Science Related to Issue

Routine Maintenance:

Cut and Fill Slopes

- ☐ Slides from the ditches and roadway will be removed. Overhanging material from the cut and fill slopes will be removed to restore the natural angle of repose.
- ☐ Areas with potential to deliver debris to any typed water will be stabilized by fill pullback, weight placed at toe of slope, compaction, abandonment, and/or other measures as appropriate.
- ☐ Undesirable slide materials and debris will not be mixed into the surface material.
- ☐ Exposed cut and fill slopes will be seeded with erosion resistant native vegetation.
- ☐ Buffers such as slash filter windrows, silt fences, or straw wattles will be placed appropriately along stream adjacent roads where there is potential for surface erosion sediment delivery to typed waters.

Road Surface and Maintenance

- ☐ The road surface, turnouts, and shoulders will be graded and shaped as needed to provide a suitable travel surface and control water runoff in an even, dispersed manner. Grading may be substituted with a lift of surface rock.
- ☐ Waste material from slides or other sources should be stabilized so as to not deliver sediment into typed waters. Stabilization methods include establishing vegetation and covering exposed soils with straw or hydro mulching.
- ☐ Grading will not undercut the back slope of the bottom of the ditchline.
- ☐ Desirable surface material will not be bladed off the roadway.
- ☐ Surface material lost or worn away will be replaced.
- ☐ Outside berms will be removed except those needed to protect sensitive slopes and fills.
- ☐ Grade roads when moisture and soil conditions are not likely to result in excessive erosion.
- ☐ Use sediment traps, silt fencing or sumps only as temporary measures because of continuous maintenance. Use these methods if erosion is likely to deliver sediment to typed waters.

Drainage: Ditched Roads

- ☐ Ditches and drainage channels at inlets and outlets of culverts will be kept clear of obstructions and functioning as intended.
- ☐ Culverts will be inspected and cleaned routinely and immediately after any significant storm events regardless of harvest activity.
- ☐ Where a relief culvert outfall drains onto unprotected erodible material, a rock apron, flume, down spout, and/or rock energy dissipaters will be installed to prevent erosion below the outfall.
- ☐ Silt bearing surface runoff will be prevented from entering typed waters. This will be achieved by adding relief culverts, clean hard rock, ditch filters, or silt ponds. Drainage structures will be inspected and cleaned routinely as needed.
- ☐ Existing relief culverts in good shape and functionally adequate but not meeting current minimum diameter requirements may remain until worn out. When the relief culvert is replaced, it will be upgraded to at least the 18-inch western Washington or 15-inch eastern Washington diameter standard.

Drainage: Out-sloped Roads

- ☐ A 3% outslope will be maintained where appropriate.
- ☐ Drivable dips will be installed in the road subgrade as necessary to control surface runoff.
- ☐ Waterbars may be installed as necessary when the road is not in use.

Relief Culvert Installation

- ☐ All new installations on road grades in excess of 3% will be skewed at least 30 degrees from perpendicular to the road centerline.
- ☐ Relief culverts will be installed using a slope steeper than the incoming ditch, but not less than 3%.
- ☐ Rock armored headwalls at culvert inlets will be constructed and maintained to the road shoulder level with material that will resist erosion.
- ☐ Relief culverts will be placed so that ditch water is routed to the forest floor in a stable location and energy dissipaters will be added as needed to prevent erosion.
- ☐ Energy dissipaters and sediment traps will be placed at the out slope or downspout end to prevent erosion or trap suspended sediment.

Seeps and Springs

- ☐ All seasonal and year round springs entering the road ditchline will be cross drained through the roadbed within 50 feet of where it enters the ditchline.

Stream Crossings

- ☐ New or replacement stream crossing installations will be sized, and the fill protected, to accommodate a 100-year flood. Rock armor headwall culvert inlets will be installed where the stream gradient above the crossing is greater than 6 %.
- ☐ Existing stream crossings will be inspected for scour, sediment delivery, outfall, and flow adequacy. If the structure is functioning with little risk to public resources it will be maintained until the end of its functional life. For culverts not being replaced, maintenance will include culvert inlet and outlet cleanout, culvert repairs, fill erosion control, and other work as needed.
- ☐ In addition to requirements for non-fish habitat stream crossings, fish passage for adult and juvenile fish will be maintained.

Bridges

- ☐ Exposed bridge fills next to streams will be armored or rip-rapped to prevent erosion.
- ☐ Bridge approaches will be maintained to be level with the bridge deck with crushed rock or pavement.
- ☐ Bridges will have curbs or splashguards installed.
- ☐ All bridge decks will be sealed to prevent road water and mud from dropping through to streams.
- ☐ Bridges will be cleaned to remove gravel and sediment that may enter streams.

Fords

- ☐ No Fords
- ☐ Fords that are not functional will be abandoned, rock armored, paved, or replaced with a culvert or bridge as necessary.
- ☐ If streambed does not have firm rock or gravel base, install stabilizing material. Use reinforced concrete planks, crushed rock, riprap or rubber mats.

Storm Maintenance Plan

Pre-storm Planning

- ☐ Relief culverts will be inspected and cleaned as necessary prior to October 1 of any given year.
- ☐ Waterbars that are installed will be re-established prior to October 1 of any given year.
- ☐ Silt fences and settling ponds will be inspected and cleaned prior to October 1 of any given year.
- ☐ Waste areas will be placed in locations that are known to be stable and that have no potential to deliver sediment to typed waters or cause landslides.
- ☐ When storm related maintenance issues are discovered, the landowner will be responsible for follow-up.

Storm Event Emergency Maintenance Strategy

- ☐ All roads within the system will be patrolled within 72 hours of a major storm event.
- ☐ Damage will be assessed then repaired or stabilized by a priority determined by the damage or potential to damage a public resource.
- ☐ Appropriate maintenance or repair actions will be taken based on these observations and the affected agencies will be contacted (e.g., DNR, DOE, WDFW, County).

Post Storm Recovery

- ☐ Repair follow-up will be prioritized with fish bearing streams a number one priority.
- ☐ Drainage structures that fail will be replaced with adequate sized structures designed to handle a 100-year flood event.
- ☐ Waste areas will be compacted then reseeded before the next winter season.
- ☐ Cutbank failures that have potential to deliver sediment to a Typed water will be vegetated as soon as

possible. [] Emergency repair work done will be addressed in a RMAP annual report.
See WAC 222-24 for existing BMPs
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>
Road construction and maintenance (WAC 222-24) <ul style="list-style-type: none"> • Postpone access road abandonment until after biomass collection • Ensure all local RMAP work is still completed within annual report timelines • Ensure that roads are maintained and “storm proofed” immediately after tree bole harvest, and before biomass collection, while retrievable biomass is drying
<p>The recent RMAP 5 year extension approved by the FP Board has new reporting requirements associated with landowner annual work plans. Those annual work plans should not be postponed or modified (e.g., selecting “worst first” areas) to accommodate forest biomass removal. Landowners should “time” their biomass projects accordingly until RMAP fixes are completed by 2021.</p> <p>The BMPs and some of the reporting requirements listed above were not cross-walked with DNR’s Road Board Manual because the RMAP 5 year extension technical committee did not have time before the FP Board adopted the Extension. Now would be a good time to do so.</p> <p>DNR State Lands will have to change their Road Maintenance and Abandonment strategy since they are required under existing rule to complete some of that work well before the forest biomass has time to “season”. That may require a rule change.</p>

3. Timber only.

Effects timber harvest, road construction, etc. only; does not directly affect impacts of biomass collection.

Topic 1: Retention Levels
<ol style="list-style-type: none"> 1. WRT/GRT/log requirements haven’t been updated in over 20 years. Do these need to be modernized? <ol style="list-style-type: none"> a. Sound snags and logs may be collected as forest biomass. b. Current rules were experimental, pending the results of the LLWA models. c. L&I rules conflict with replanting and the ability to leave snags. 2. <u>Will preexisting CWD and “breakage” provide sufficient amounts of CWD for wildlife?</u> <ol style="list-style-type: none"> a. <u>Slash includes FWD and CWD; CWD tends to be deficient.</u>
Existing Forest Practices Rules
<p>WAC 222-16-010 “Green recruitment trees” definition. Future wildlife trees.</p> <p>WAC 222-16-010 “Wildlife reserve trees” definition. Habitat for wildlife species dependent on standing trees.</p> <p>WAC 222-30-020 (11) Wildlife reserve tree management. (b) Western WA: 3 wildlife reserve trees/acre, 2 green recruitment trees/acre, and 2 down logs/acre shall be retained. Eastern WA: 2 wildlife reserve trees/acre, 2 green recruitment trees/acre, and 2 down logs/acre shall be retained.</p> <p><u>WAC: Critical habitat, Spotted Owls, and Marbled Murrelets (off-limits areas)</u></p> <p><u>No protection for duff/litter, understory shrubs/herbs, non-merchantable trees, or slash (FWD, CWD)</u></p>

Existing BMP's/Science Related to Issue
<p>Management standards for numbers of snags and down wood in forests of the Pacific Northwest have been far too low as compared with unharvested reference conditions (Ohmann and Waddell 2002).</p>
<p>The optimum quantity of CWD [$>3''$ diameter] for providing acceptable risks of fire hazard and fire severity while providing desirable quantities for soil productivity, soil protection, and wildlife needs is about <u>5 to 20 tons per acre for warm dry ponderosa pine and Douglas-fir types and 10 to 30 tons per acre for cool Douglas-fir and lodgepole pine types and lower subalpine fir types</u>. The optimum quantity for soil and fire considerations refers to downed CWD. For wildlife the optimum quantity involves both standing and downed CWD (Brown et al. 2003).</p>
<p>Our empirical data suggest that <u>15-20% cover of coarse woody debris on the forest floor, well distributed across the site, would be adequate for most small mammals</u>, whereas 5-10% cover would not allow the mammals to reach their potential abundances. But coarse woody debris, <u>especially large, standing and fallen dead trees</u>, is not only an important habitat component for forest floor small mammals, but also provides critical habitat elements for birds (Carey et al. 1991) and amphibians (Bury et al. 1991a, Corn and Bury 1991b; Carey & Johnson 1995). Applies to Western Hemlock Zone.</p>
<p><u>Leaving tall (1-2 m) stumps from large trees</u> can be of particular importance in contributing to coarse woody debris, seedbeds for shade-tolerant trees and understory shrubs such as <i>Vaccinium</i> spp., and substrates for epiphytes. Large, decaying stumps in young stands are often used by forest floor and arboreal rodents as nest sites and escape cover (A. B. Carey, unpublished data; Carey & Johnson 1995). Applies to Western Hemlock Zone.</p>
<p>Wildlife/biodiversity BMPs</p> <ul style="list-style-type: none"> • Wildlife will benefit most from a conservation strategy that optimally combines both fine filter and coarse filter approaches (Hunter 1990, Lindenmayer et al. 2006). <ul style="list-style-type: none"> ○ Fine filter approach: focuses on rare or specialized species ○ Coarse filter approach: protecting entire ecosystems • How Should We Spatially Distribute Dying and Dead Wood? (Bunnell et al 2002b) <ul style="list-style-type: none"> ○ Maintain a target density of 2-3 large snags (> 50 or 30 centimeter diameter) per hectare, among 10-20 smaller snags per hectare through the rotation. However, ensure variation in densities, not an even distribution everywhere. ○ Providing for future recruitment of snags in coniferous stands is necessary to ensure that target densities are maintained through the rotation and after harvest. Suggested densities do not apply to each hectare of forest. Because of the diversity of organisms using snags, variability in density of snags must be maintained within and among stands. ○ Maintain a range of log sizes from 6 cm to >50 cm in diameter at densities of 100 to 200 cubic meters/hectare or more ○ Maintain patches of snags and DWD of at least 1-3 ha using both aggregated and dispersed retention ○ Meet dead wood requirements for larger species in areas where the emphasis is not on intensive fiber production. • Retain as much dead wood as possible (FWD, CWD, logs, snags) from various size and decay classes and tree species <ul style="list-style-type: none"> ○ Retain 7-25 den trees and 6-12 snags per acre (MO) ○ Retain at least 1.6 logs per acre (at least 16 feet in length and 12 inches in diameter on the coast and 6.5 feet in length and 3 inches in diameter in the interior; BC). ○ In areas under uneven-aged management, retain a minimum of 6 secure cavity and/or snag trees per acre, with one exceeding 18 inches DBH and 3 exceeding 12 inches DBH. In areas lacking such cavity trees, retain trees of these diameters with defects likely to lead to cavity formation. (NH) ○ In areas under even aged management, leave an uncut patch for every 10 acres harvested, with patches totaling 5 percent of the area. Patch size may vary from a minimum of 0.25 acre.

<p>Use cavity trees exceeding 18 inches DBH or active den trees as nuclei for uncut patches. Remember, the larger the tree, the more species that can use it. Riparian and other buffers can help to satisfy this goal. (NH)</p> <ul style="list-style-type: none"> ○ Leave up 15 to 30% of harvestable biomass as coarse woody debris. • Stewart et al. 2010, Table 25 <ul style="list-style-type: none"> ○ Retain some green wildlife trees (trees with cavities and rot; GRTs) ○ Retain some mast-producing trees (hardwood species) and shrubs of various species and size classes ○ Retain fruit-producing shrubs and trees ○ Retain biological legacies in clumps and buffers ○ Retain slash piles that show evidence of use by wildlife ○ Avoid biomass harvests within sites where endangered or threatened plant or animal species are known to exist (practices should protect and enhance habitat) ○ Avoid/limit biomass harvesting in areas of high conservation value/sensitive sites (wetlands, springs/seeps, vernal pools/ponds, riparian zones, cliffs, caves) ○ Avoid harvest activity in leave tree clumps ○ Avoid damaging existing downed woody debris, especially large (18+ inches) hollow or rotten logs and rotten stumps during harvesting operations (including tree falling, skidding, and road and skid trail layout). ○ Avoid disrupting upturned tree roots during the breeding season to protect nesting birds. ○ Avoid “hard edges,” by creating a gradual transition into harvested areas ○ Consider creating travel corridors in large harvests (>40 acres) ○ Leave additional woody debris in stands with low levels of woody debris prior to biomass harvests ○ Avoid biomass harvests more than once per rotation to prevent a decline in the quantity and quality of woody biomass pools over time • Oregon <ul style="list-style-type: none"> ○ Select silviculture treatments that provide a <u>diversity of forest structure</u> so a wider range of habitats for wildlife and understory plants can provide for overall biodiversity. ○ Hagar and others (2004) suggest using a <u>variety of thinning intensities and patterns</u>, from no thinning to very widely spaced residual trees, to maximize avian diversity at the landscape scale and structural diversity both within and among stands. ○ Pilliod and others (2006) suggest that managers should <u>retain refugia of untreated stands and critical habitat elements</u>, particularly slow to recover features such as large-diameter down wood and snags, to increase habitat heterogeneity, benefit the greatest number of species over time, minimize the effects of direct mortality, and accelerate recovery. ○ We believe there is an adequate amount of literature informing the potential effects of woody biomass removal on forest species to warrant a <u>precautionary approach</u> to its management until further research can be conducted.
<p>Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i></p>
<p><u>Need to complete Landscape Level Wildlife Assessment models</u></p> <ul style="list-style-type: none"> • to identify species/guilds dependent on CWD and FWD • to identify gaps in the Rules, esp. WRT, GRT • Is current retention of WRT and GRT in RMZ, sensitive sites, leave areas sufficient? • Is preexisting CWD plus breakage within the unit sufficient?
<p>If ~30% retention based on “breakage” is assumed, then prohibit reentry into the unit to collect slash that broke off unless it can be shown that the minimum % required (TBD) is still being retained.</p>
<p>Need precautionary principle in absence of knowledge</p>

Potential rule revisions

- Snag retention
 - To ensure retention of snags of sufficient size, abundance, distribution, and variable degrees of decay to support wildlife associated with snag habitat.
- Snag recruitment
 - To ensure recruitment of snags into landscapes deficient in snags of sufficient size, abundance, distribution, and degrees of decay to support wildlife associated with snag habitat.
- Green tree retention
 - To ensure retention of trees of sufficient size, abundance, and distribution to support wildlife associated with large tree habitat.
- Green tree recruitment
 - To ensure recruitment of large trees into landscapes that are currently deficient of large trees of sufficient size, abundance, and distribution to support wildlife associated with large tree habitat
- Down woody material retention
 - To ensure logs of sufficient size, abundance, distribution, and degrees of decay are retained on site to support wildlife associated with down wood habitat.
- Down woody material recruitment
 - To ensure recruitment of down woody material into landscapes that are currently deficient in down woody material of sufficient size, abundance, distribution, and degrees of decay to support wildlife associated with down wood habitat
- Duff and litter layer retention
 - To support wildlife associated with duff and litter habitat
- Duff and litter layer recruitment
 - To allow development of deep duff and litter layers into landscapes that are currently deficient in duff and litter layers of sufficient depth, development, and distribution to support wildlife associated with duff and litter habitat.

Topic 2: Other Issues

1. How is sufficient large woody debris maintained in unbuffered Type Ns and Np streams? (Water Quality, Riparian Zones/Unstable Slopes, Water Infiltration)

Existing Forest Practices Rules

WAC 222-30-021(2) Western WA Type Np and Ns Water.

(a) 30-foot wide equipment limitation zone.

WAC 222-30-022 (2) Eastern WA Type Np and Ns Water.

(a) 30-foot wide equipment limitation zone.

Existing BMP's/Science Related to Issue

Board Manual Section 4: Guidelines for Clearing Slash and Debris from Type Np and Ns Water

The benefits of retaining slash are tied to soil, fish and wildlife, and other public resources. Small woody debris (<4 inches diameter) provides cover for a variety of riparian-dependent amphibians and small mammals. Green branches left over exposed soils may reduce erosion. Small woody debris in the water can provide important habitat for small fish (fry) and aquatic amphibians, and may trap leaf litter and other detritus. Debris left on flood plains trap leaf litter and other detritus, which subsequently decomposes and enriches the soil. Evidence also suggests that small accumulations of woody debris may moderate fine sediment transport to downstream reaches. Large woody debris (>4 inches diameter and >1.5 times bankfull width in length) may provide important structural components to stream channels, trapping beds of gravel that are used by fish for spawning, and as habitat for aquatic invertebrates.

Floodwater flowing around large woody debris scours pools, which become habitat for more abundant and larger fish. While Type Np and Ns Waters are not fish bearing by definition, woody debris in these waters are important for helping to abate excessive erosion during peak flows and for providing recruitment of debris which if eventually moved down stream may become beneficial structures for fish habitat in Type F and S Waters.
<p>Stewart et al. 2010, Table 26 (other state BMPs)</p> <ul style="list-style-type: none"> • Woody biomass may be used to control water flow, prevent soil erosion, and/or stabilize exposed soil; these structures may be left in place after harvest • Streamside management zones, of at least 50 feet in width, should be used on all perennial and intermittent streams <ul style="list-style-type: none"> ○ Retain at least 33% of trees in the stream management zone (SMZ), 40 sq.ft. of basal area • Avoid removing biomass from riparian management zones or within 25ft of a dry wash
<p>Comments:</p> <p><i>Do you think rule change is needed? Guidance? Other?</i></p> <p><i>What specific changes/guidance is needed?</i></p>
Guidance should be developed stating that all residual forest biomass remain in the 30 ft. ELZ and may want to expand to 50 ft. – not the ELZ, but the need to leave all residual forest biomass on site in clearcut portions Np waters and all Ns waters. This is less of a concern on steep ground w/ cable yarding, however, ground based equipment on flatter ground have the ability to “reach” into ELZ w/o tracks entering. Need to clarify in guidance.